



Material Safety Data Sheet

PROPANE HD-5 GRADE

October 30, 1998

NATURAL GAS LIQUIDS

PHILLIPS 66 COMPANY

A Division of Phillips Petroleum Company

Bartlesville, Oklahoma 74004

PHONE NUMBERS

Emergency: (918) 661-8118

General MSDS Information:

(918) 661-0247

For Additional MSDSs: (918) 661-7431

A. Product Identification

Synonyms: HD-5; Liquefied Petroleum Gas; LP-Gas; LPG

Chemical Name: Propane

Chemical Family: Paraffinic Hydrocarbon

Chemical Formula: C₃H₈

CAS Reg. No.: 74-98-6

Product No.: 1012532 (26160); (26161); (26163)
(26164); (26165)

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product is in U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals; hence, it may be subject to applicable TSCA provisions and restrictions.

B. Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Propane	74-98-6	> 90	1000 ppm	Simple Asphyxiant
Propylene	115-07-1	< 5	NE	Simple Asphyxiant
Butanes	Various	< 2.5	NE	800 ppm*
Ethyl Mercaptan**	75-08-1	0 - 50 ppm	10 ppm(c)	0.5 ppm

* As n-Butane.

** WARNING: Be aware that with odorized product the intensity of ethyl mercaptan stench (its odor) may fade due to chemical oxidation (in the presence of rust, air or moisture), adsorption or absorption. Some people have nasal perception problems and may not be able to smell the ethyl mercaptan stench. Other odors may mask or hide the ethyl mercaptan stench. While ethyl mercaptan may not impart the warning of the presence of propane in every instance, it is generally effective in a majority of situations. Familiarize yourself, and your customers, with this warning, and other facts associated with the so-called "odor-fade phenomenon." If you do not already know all the facts, write Phillips 66 Company and ask for more information.

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about odor and the other safety considerations associated with the handling, storage and use of propane.

See Section F, Recommended Exposure Limits.

(c) Denotes ceiling limit

C. Personal Protection Information

Ventilation: Use adequate ventilation to control exposure below the recommended exposure limits.

Respiratory Protection: Not generally required. If exposure to or concentrations above the recommended exposure limit is possible, use NIOSH approved self-contained breathing apparatus (SCBA).

Eye Protection: Use safety glasses with side shields. For splash protection use chemical goggles with face shield if exposure to liquefied gas is possible.

Skin Protection: Use rubber or other impervious gloves, if exposure to liquefied gas is possible.

Odor Fading: See WARNING information in Section B.

NOTE: Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

D. Handling and Storage Precautions

Do not breathe vapors, mist, fume or dust. Do not get liquefied gas into eyes, on skin or on clothing. May cause freeze burns upon direct contact. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use only with adequate ventilation.

Keep away from heat, sparks, and flames. Store in well ventilated area. Bond and ground during transfer. Store in tightly closed container. Do not puncture or incinerate container. Secure container to prevent damage.

NOTE: Store in containers that have been properly purged and passified. (Oxidation of ethyl mercaptan may occur in the presence of rust, air, or water.)

E. Reactivity Data

Stability: Stable

Conditions to Avoid: Not Established

Incompatibility (Materials to Avoid): Oxygen and strong oxidizing agents

Hazardous Polymerization: Will Not Occur

Conditions to Avoid: Not Established

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Hazardous Decomposition Products: Carbon and sulfur oxides formed when burned.

F. Health Hazard Data

Recommended Exposure Limits:

Based on odor, the company recommends a permissible exposure level (8-hr. TWA) of 1 ppm for Ethyl Mercaptan.

See Section B.

Acute Effects of Overexposure:

Eye: Very high gas concentrations may cause mild irritation effects. Liquefied gas may cause freeze burns upon direct contact.

Skin: Very high gas concentrations may cause mild irritation to mucous membranes. Liquefied gas may cause freeze burns upon direct contact.

Inhalation: Simple asphyxiant. Extreme over exposure may produce dizziness, headache, disorientation, excitation, fatigue, inability to concentrate, vomiting, coughing, anesthesia, unconsciousness and death.

Ingestion: Not a likely exposure route. Liquefied gas may cause freeze burns to the mucous membranes and possible central nervous system depression.

Subchronic and Chronic Effects of Overexposure:

Humans breathing 1000 ppm of propane for eight hours a day, five days a week, for approximately two weeks showed no abnormal effects in their cardiac, pulmonary or neurologic functions.

Laboratory animals have exhibited a higher degree of narcosis when exposed to both butane and butylene (additive effect), than the degree of narcosis exhibited following exposure to butane or butylene alone.

Other Health Effects:

Propane was not mutagenic in the AMES assay.

A Toxicity Study Summary for Propane is available upon request.

Health Hazard Categories:

	Animal	Human		Animal	Human
Known Carcinogen	—	—	Toxic	—	—
Suspect Carcinogen	—	—	Corrosive	—	—
Mutagen	—	—	Irritant	—	—
Teratogen	—	—	Target Organ Toxin	X	X
Allergic Sensitizer	—	—	Specify - Freeze Burn Hazard;		
Highly Toxic	—	—	Lung-Simple Asphyxiant		

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First Aid and Emergency Procedures:

Eye: Flush eyes with running water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Skin: Wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.

Inhalation: Immediately remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.

Ingestion: If illness or adverse symptoms develop, seek medical attention.

NOTE: For freeze burns, immediately flush affected area with tap water for at least fifteen minutes, seek immediate medical attention.

G. Physical Data

Appearance: Colorless Liquefied Petroleum Gas

Odor: Odorless

(Repulsive if odorant has been added)

Boiling Point: -44°F (-42°C)

Vapor Pressure: 108-124 psia @ 70°F (21°C)

Vapor Density (Air = 1): 1.5

Solubility in Water: Negligible

Specific Gravity (H₂O = 1): 0.508-0.510 @ 60/60°F (15.6/15.6°C)

Percent Volatile by Volume: 100

Evaporation Rate (Ethyl Ether = 1): >1

Viscosity: Not Established

H. Fire and Explosion Data

Flash Point (Method Used): -156°F (-104°C) (Estimated)

Flammable Limits (% by Volume in Air): LEL - 2.1

UEL - 9.5

Fire Extinguishing Media: Dry chemical, foam or carbon dioxide (CO₂)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Use NIOSH approved self-contained breathing apparatus and other protective equipment and/or garments described in Section C if conditions warrant. Shut off source, if possible. Water fog or spray may be used to cool exposed containers and equipment. Allow fire to burn until gas flow is shut off, if possible.

Fire and Explosion Hazards: Carbon and sulfur oxides formed when burned. Highly flammable vapors which are heavier than air may accumulate in

low areas and/or spread along ground away from handling site. Flash back along the vapor trail is possible. Heated containers may rupture violently and suddenly without warning due to vessel over-pressure (BLEVE). Fragmentation of the container should be anticipated. If flame is against the container, withdraw immediately on hearing a rising sound, if venting increases in volume or intensity, or if there is discoloration of the tank due to fire.

I. Spill, Leak and Disposal Procedures

Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective garments and/or equipment described in Section C if exposure conditions warrant. Shut off source, if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Recover as much bulk liquid as possible, by pumping into suitable containers, taking precautions to prevent sparks or other ignition sources (such as, proper bonding and grounding of containers and transfer equipment). If absorbent is used, promptly place in sealed containers to control odors.

Spill residues and contaminated soil may be deodorized using dilute (5%) aqueous solutions of bleach (sodium hypochlorite). Do not use concentrated or dry bleach. Do not attempt to neutralize or deodorize bulk liquid mercaptan. Concentrated bleach will cause heating and possible ignition. Attempts to neutralize bulk liquid mercaptan with bleach solutions will be ineffective and only serve to increase the amount of liquid to dispose.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations): Incinerate in permitted unit or place in other permitted waste disposal facility.

J. DOT Transportation

Shipping Name: Propane
Hazard Class: 2.1 (Flammable gas)
ID Number: UN 1978 or UN 1075*
Packing Group: Not applicable
Marking: Propane, UN 1978 or UN 1075*
Label: Flammable gas
Placard: Flammable gas/1978 or 1075*

Hazardous Substance/RQ: Not applicable
Shipping Description: Propane, 2.1 (Flammable gas), UN 1978 or UN 1075*
Packaging References: 49 CFR 173.304, 173.306, 173.314, and 173.316

NOTE: For domestic shipments of this material the alternate shipping description "Liquefied petroleum gas, 2.1 (Flammable gas), UN 1075" is authorized.

* For domestic transportation only, UN 1075 may be substituted for UN 1978 as long as the substitution is consistent on package markings, shipping papers and emergency response information.

K. RCRA Classification - Unadulterated Product

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Ignitable (D001)

Prior to disposal, consult your environmental contact to determine if TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

L. Protection Required for Work on Contaminat

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

M. Hazard Classification

☒ This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<input type="checkbox"/> Combustible Liquid	<input type="checkbox"/> Flammable Aerosol	<input type="checkbox"/> Oxidizer
<input checked="" type="checkbox"/> Compressed Gas	<input type="checkbox"/> Explosive	<input type="checkbox"/> Pyrophoric
<input checked="" type="checkbox"/> Flammable Gas	<input checked="" type="checkbox"/> Health Hazard (Section F)	<input type="checkbox"/> Unstable
<input type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Water Reactive
<input type="checkbox"/> Flammable Solid		

☐ Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

N. Additional Comments

SARA 313

This product contains the following chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372. (See Section B).

Propylene

NOTE: Additional information concerning ethyl mercaptan and "odor fading" are contained in "LP-Gas Odorization Information" and Technical Information Bulletin: TB34.19-1, "LPGAS Odorization," both published by Phillips

66 Company and available at your request.

NFPA 704 Hazard Codes - - - - - Signals

Health : 1	Least - 0
Flammability: 4	Slight - 1
Reactivity : 0	Moderate - 2
Special Haz.: -	High - 3
	Extreme - 4

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